

Fiedler Encyclopedia of Excipients

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Steareth-16

Definition INCI name for ▶polyethylene glycol(16)stearyl ether.

Steareth-20

Definition INCI name for ▶polyethylene glycol(20)stearyl ether.

Steareth-21

Definition INCI name for ▶polyethylene glycol(21)stearyl ether.

Steareth-25

Definition INCI name for ▶polyethylene glycol(25)stearyl ether.

Stearic acid

(Cognis, Merck, OLEON, PG Chemicals, Protameen)

Definition Acidum stearicum, octadecanoic acid, CAS 57-11-4, $\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$, mol wt 284.49. — ▶Emersol, Neofat 18.

Properties White leaflets or white powder, with fat-like odor, insoluble in water, soluble in alcohols and fat solvents. S. can crystallize from solution in three different forms: A, B, and C. According to W. Beckmann determination of the exact solubility of S. in decane, methyl alcohol and butanone allows statements concerning the stability ranges of the three modifications (Fette, Seifen, Anstrichmittel 86, 217 [1984]). The crystal structure of S. can be affected by emulsifiers (N. Garti et al., J. Amer. Oil Chemists' Soc. 58, 1058 [1981]; C. A. 96, 50953 [1982]). According to P. D. Cratin the surface and interfacial properties of S. are markedly pH dependent (J. Dispers. Sci. Technol. 14, 559 [1993]; Internat. Pharm. Abstr. 31, No. 3-1458 [1994]). A study of the effects of S. and ▶sterculic acid on morphology of cultured rat hepatome cells (X. Huang et al., Disi Junyi Daxue Xuebao 17, 321 [1996]), C. A. 126, 69815 [1997]). In in vitro experiments N. A. Habib et al. observed some antitumorigenic action of S. (Brit. J. Cancer 56, 455 [1987]; C. A. 108, 31457 [1988]). In an overview (64 references) D. L. J. Opdyke reports on the biological data of the S. (Food, Cosmet. Toxicol. 17, 383 [1979]). According to H. Thaler and H.-J. Kleinau (Fette, Seifen, Anstrichmittel 71, 92, 261 [1969]) saturated fatty acids, e. g. S. and their methyl esters, tend to autoxidation. On the quality requirements of the Toilet Goods Association for S. see Soap, Perf. Cosmet. 27, 744 (1954).

Product data Mp 69.6°, bp₁₀₀ 298°, d₂₀ 0.9408, n_D^{80.2} 1.4299. Merck provide S. which conforms to the requirements of the following pharmacopoeias: FU, NF, Ph Helv and Ph Nord.

Applications In drug production, for coating of bitter drug substances; the addition of S. prevents the change in color of ascorbic acid tablets (Austral. P. 239 831 of 10. 3. 59/26. 7. 62; C. A. 63, 1670 [1967]), together with its sodium salt, as an anionic emulsifier for creams (stearate creams). A mixture of 18.9 (g) polyethylene glycol, 12.6 water, 36 diethylene glycol, 5 citric acid, 2.5 EDTA (Trilon B), 15 o-tolylbiguanide, 5 tartaric acid and 5 benzyl alcohol is a good stabilizer for cosmetic S. (A. A. Zelenetskaya et al., Russ. P. 278 038 of 15. 5. 69/ 5. 8. 70; C. A. 74, 34560 [1971]).

Toxicology LD₅₀ (rat, i. v.) 22 mg/kg, (mouse, i. v.) 23 mg/kg; cat (i. v.), lethal dose 5 mg/kg. An overview reveals that S. is only slightly toxic (tested on fish) and irritates skin and mucosa. An irritant effect was also found after inhalation of S. (Dang. Proper Ind. Mater. Rep. 9, 73 [1989]; Toxicol. Abstr. 12, No. 11-7695 [1989]). A. C. de Groot et al. observed a case of contact allergy to S. and one to glycerol stearate (Contact Dermatitis 19, 76 and 77 [1988]).

The CIR Expert Panel of the CTFA prepared the final report for S. and concluded, that S., in concentrations used in cosmetics, can be declared as safe (J. Amer. Coll. Toxicol. 6, 321 [1987]; C. A. 108, 1010192 [1988]).

Stearic acid, almost germ-free

Definition ▶Emersol 132 (USP grade) and Emersol TP (Food grade) undergo microbiological tests after production. In accordance with a certificate they contain < 50, usually < 10 micro-organisms/g. This applies to bacteria and fungi (Soap Cosmet. Chem. Specialties 48, No. 3, 111 [1972]).

Stearic acid butyl ester

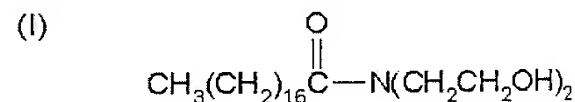
Definition Butyl stearate, CAS 123-95-5, $\text{CH}_3 \cdot (\text{CH}_2)_{16} \cdot \text{COO}(\text{CH}_2)_3 \cdot \text{CH}_3$, C₂₂H₄₄O₂, mol wt 340.

Product data D₂₀ 0.859, mp 20°.

Applications Plasticizer.

Stearic acid diethanolamide

Definition Stearoyl diethanolamide, N,N-bis(2-hydroxyethyl)stearamide, INCI Stearamide DEA, RD 977058-29-9, CAS 93-82-3, C₂₂H₄₅NO₃, a mixture of the diethanolamides of stearic acid (I).



Stearic acid ester of dextran

Definition ▶Dextran.

Stearic acid ethyl ester

Definition INCI Ethyl Stearate, CAS 111-61-5, C₂₀H₄₀O₂.

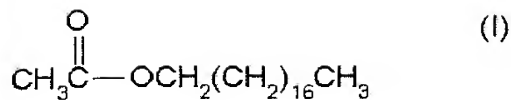
Stearic acid hydrazide

Definition RD 977058-34-6, CAS 4130-54-5, C₁₈H₃₅N₂O, C₁₇H₃₅CO-NH-NH₂

Properties A non hygroscopic, fine, white powder, insoluble in water and ethyl alcohol, sparingly soluble in hydrocarbons and fats, soluble in hot benzene and in mixtures of toluene and isopropyl or butyl alcohol, contains min. 95 % mono-S., max. 5 % di-S. and max. 0.03 % free hydrazine.

Applications S. is recommended as a stabilizer for toilet soaps (0.025–0.05 %), it is compatible with the usual antimicrobially effective substances and does not impair their spectrum.

Toxicology LD₅₀ (rat, oral) 5 g/kg; good skin and mucosal tolerance; is not absorbed by rabbit skin.

**Stearyl alcohol**

(Aceto, Cognis, Goldschmidt, Protameen)

Definition Octadecanol, octadecyl alcohol, stearin alcohol, CAS 112-92-5, $\text{CH}_3(\text{CH}_2)_{16}\text{CH}_2\text{OH}$, $\text{C}_{18}\text{H}_{38}\text{O}$, mol wt 270.48. — ▶Fatty alcohols, ▶Lorol, ▶Stearylaz 18, ▶Exxal 18, ▶Lanette 18, ▶Tego Alkanols.

Properties Colorless leaflets, insoluble in water, soluble in alcohol and fat solvents. Mp 59°, d 0.8124, bp 210.5°.

Applications S. is added to ointments as a solidifying agent, to creams as an emulsion stabilizer. Paraffin oil-water emulsions, containing alkyl sulfates, can be further stabilized by addition of S. (G. W. Hallworth, J. Pharm. Sci. 25, Suppl. 87 P [1973]; Cosmet. Perfum. 89, No. 11, 76 [1974]). According to G. E. Mapstone (Cosmet. Perfum. 89, No. 11, 31 [1974]) the incorporation of pure S. or cetyl alcohol into emulsions may yield unstable products, since crystallization, possibly arising during production, removes the alcohol(s) from the interphase. Such changes can largely be prevented by addition or increase of the content of a co-emulsifier.

Toxicology The CIR Panel has reviewed the findings presented concerning the toxicity of S. and concluded, that S. can be declared as safe in concentrations used in cosmetic agents (R. L. Elder, J. Amer. Coll. Toxicol. 4, No. 5, 1 [1985]; Toxicol. Abstr. 9, No. 4-2327 [1986]; C. A. 104, 74764 [1986]).

References Stearyl alcohol and its Derivatives. Spec. Chem. 6, No. 1, 17 (1986).

Stearyl alcohol, ethoxylated

Definition Ethoxylated S. was synthesized and isolated; properties and product data (J. Scotney and E. V. Truter, J. Soc. Cosmet. Chemists 22, 201 [1971]). Impact of S. on the foaming characteristics of shampoos (S. A. De Ragon et al., J. Soc. Cosmet. Chemists 20, 777 [1969]). — ▶Fatty alcohols (ethoxylated) and Polawax.

Stearyl amide ether carboxylic acid

Definition ▶Akypo AH 400.

Stearylamidopropyl morpholine lactate

Definition ▶Isostearylamidopropyl morpholine lactate.

Stearyl amine

Definition Octadecyl amine, stearamine, CAS 124-30-1, an aliphatic amine derived from stearic acid, $\text{CH}_3(\text{CH}_2)_{16}\text{CH}_2\text{NH}_2$, $\text{C}_{18}\text{H}_{39}\text{N}$.

Toxicology The CIR Expert Panel of CTFA has published the Final Report for S. and concluded, that the available data are not sufficient (J. Amer. Coll. Toxicol. 14, 730 [1995]; Toxicol. Abstr. 19, No. 7-4970 [1996]).

Stearylaz 18

Definition (Tensachem). Trade name for ▶stearyl alcohol.

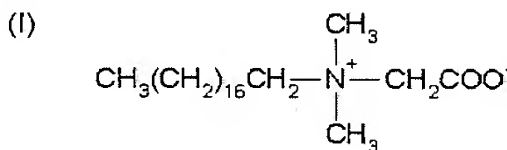
Stearyl Benzoate

(Finetex)

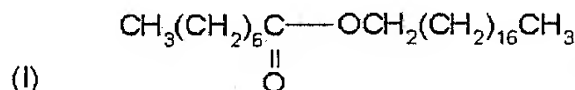
Definition INCI name for stearyl benzoate. ▶Finsolv Grades (F. 116).

Stearyl betaine

Definition Stearyl dimethyl glycine, RD 977067-64-3, CAS 820-66-6, $\text{C}_{22}\text{H}_{45}\text{NO}_2$, (I).

**Stearyl caprylate**

Definition RD 977063-11-8, CAS 18312-31-7, $\text{C}_{26}\text{H}_{52}\text{O}_2$, (I).

**Stearyl citrate**

Definition Produced by esterification of citric acid with stearyl alcohol (mixture of citric acid mono-, di- and tri-esters), CAS 1337-33-3, $\text{C}_{24}\text{H}_{44}\text{O}_7$.

Properties Insoluble in water, soluble in hot ethyl alcohol.

Applications Used as an emulsifier in the food industry.

Stearyl dihydroxyethyl glycine

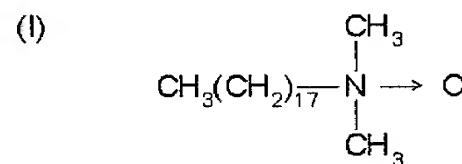
Definition ▶N-(Carboxymethyl)-N,N-bis(2-hydroxyethyl)-1-octadecanaminium hydroxide, inner salt.

Stearyl Dimethicone

Definition INCI name for a polysiloxan/polyalkylene copolymer, trade name ▶Abil Wax 9800.

Stearyl dimethyl amine oxide

Definition Stearamine Oxide, CAS 2571-88-2, $\text{C}_{20}\text{H}_{43}\text{NO}$, mol wt 313, abbreviation: SDMAO, an aliphatic amine oxide derived from stearic acid (I). — ▶Ammonyx SO.



Product data Active substance 23.4 %, water 76.6 %, d_{40}^{25} 0.947 g/cm³, viscosity of a 10 % aqueous solution (60°) 248 mPa·s, yield point 50°.

HLB (calculated) 8.3–8.8, measured 5.5–6 (K. R. Smith et al., J. Soc. Cosmet. Chemists 38, 43 [1987]).

Toxicology The CIR Expert Panel of the CTFA prepared the final report for S. and concluded that S. may be used in leave-on cosmetic preparations, up to a concentration of 5.1 % (FDC Reports [Rose Sheet] 13, No. 36, 7 [Sept. 7, 1992]).